

## **REMARKS**

Applicants have amended claims 19 and 26. Claims 19-32 are pending. Reconsideration of this application, as amended, is requested.

### **Section 112 Rejections**

Claims 19-32 were rejected under 35 U.S.C. 112, second paragraph, based on the phrase "generally the same distance". Claims 19 and 26 have been amended to recite that the offset vector is "the same distance".

The phrase "generally the same distance" was used in an attempt to define that the offset vector is generally the same for each of the composites. Support for this can be found in the figures, such as FIGS. 4B, 4C and FIG. 5. The term "generally" was presented in the claim in order to support situations where the distance supported by the figures may be, for example, different by fractions of a millimeter or so, and additionally to cover situations where the distance in the resulting product may be different, for example, by fractions of a millimeter or so.

The Examiner is invited to contact either the undersigned, Mara DeBoe at 612-332-5300 or Dan Biesterveld at 651-737-3193 to discuss this and/or alternate wording.

Claims 19-24 and 26-31 were rejected under 35 U.S.C. 112, first paragraph, based on supposedly not enabling disclosure. Applicants disagree with the contention in the Office Action that having grinding aid in the composites is essential to the practice of the invention.

The Office Action cites one mere passage from the application, one embodiment, which states that "an essential step to make any of the inventive abrasive articles is to prepare the slurry" (page 13, line 28). This states that making the slurry is essential; this does not state that it is essential that the slurry has grinding aid therein. It is the next sentence that describes what could be in the slurry, the binder precursor, the grinding aid, and the abrasive particles.

There are numerous citations throughout the remainder of the originally filed application (specification and claims) that clearly show that grinding aid is not essential. See, for example, page 2, lines 8-9: "an abrasive array of a plurality of protruding units may be structure such that *[sic]* each unit has a body composed of at least abrasive grains and binder." FIGS. 4A-H, 5 and

6A and 6B show protruding units; as stated (at page 20, lines 10-11) "although FIGS. 4A-H, 5 and 6A and 6B do not depict abrasive grains and binder within the protruding units, it is understood that such grains and binder exist, as the protruding units have abrasive grains and binder as a constituent material." There is no statement that grinding aid is a constituent in the protruding units. Further, originally filed claim 1 was directed to an abrasive array of a plurality of protruding units, each unit having a body composed of at least abrasive grains and a binder; there was no recitation of grinding aid.

Applicants note that the claims are drafted in open format ("comprising"), thus allowing, but not requiring, the inclusion of grinding aid.

### **Claim Rejections**

Claims 19-20, 22-23, 25-27, 29-30 and 32 were rejected under 35 U.S.C. 102(b) as anticipated by Pieper et al. (U.S. Patent No. 5,152,917) as evidenced by Naujok (U.S. Patent No. 6,761,620) and Flood et al. (U.S. Patent No. 5,484,330) OR under 35 U.S.C. 103(a) as unpatentable over Pieper et al. (U.S. Patent No. 5,152,917) in view of Naujok (U.S. Patent No. 6,761,620) and Flood et al. (U.S. Patent No. 5,484,330). Applicants disagree with both of these rejections.

Claims 19 and 26 are the independent claims. Each of these recites a two dimensional array of protruding units, the units comprising binder and abrasive grains. The distal linear region of each protruding unit, when projected on to a plane that is coplanar with its respective base, extends between points on the first and third side edges of the base, offset from the center of the first and third side edges, toward the second side edge. This offset vector (toward the second side edge) is in the same direction and has the same distance for each of the protruding units.

Pieper et al. provides various abrasive articles. Pieper et al., however, does not teach or suggest protruding units that have a distal linear region, which when projected on to a plane that is coplanar with its respective base, extends between points on the first and third side edges of the base, offset from the center of the first and third side edges, toward the second side edge, with this offset vector being in the same direction and having the same distance for each of the protruding units. The distal linear region may be orthogonal or not to the base.

In the Office Action, attention is specifically directed to Figure 9 of Pieper et al. Figure 9 illustrates a one-dimensional sawtooth pattern of protruding units, each unit having a distal linear region or apex, which when projected onto the base, extends between a non-central point on the first side of the base and a non-central point on the second side of the base. Applicants agree that Figure 9 does disclose an array of protruding units, but that the array is one-dimension; see, for example, column 8, lines 16-17 and lines 19-20 which state that FIG. 9 shows linear grooves, which can be abrasive composites disposed in a predetermined array. What FIG. 9 shows is a 4x1 array (with the fourth protruding unit only being shown partially on the left side of FIG. 9). This array is only one unit deep (in the paper direction), and does not meet the limitation of a two-dimensional array as required by the pending claims.

The Office Action attempts to argue that FIG. 9 is a side view of a segment of the abrasive article. Applicants do not disagree that it is a side view. As can be readily seen, it is a side view, at a slight isometric perspective. This is evident from the flat top surface that is visible (the large white areas) in FIG. 9. In any additional row of protruding units were present, these would be seen behind (above, in the figure) the seen units.

The Office Action continues that FIG. 8 includes more than one array of protruding units, which meets the recitation of at least a two-by-two array. Applicants disagree. FIG. 8 is a top view. Two protruding units are shown, extending from the left edge to the right edge of the photograph. It is not understood how a two-by-two array (or a two dimensional array, as recited by the pending claims) is seen in this figure.

The Office Action turns to Naujok and Flood et al. for other embodiments of saw tooth shapes, such as wherein the distal region is not on a plane orthogonal to the base. Whether or not the linear distal region is on a plane orthogonal to the base or not is not an issue with the pending claims. The claims recite that the offset vector of the linear region most distal from the base is in the same direction the same distance from the second side edge for each of the protruding units.

What Pieper et al. is lacking, is at least a two-dimensional array of protruding units as defined. Neither Naujok nor Flood et al. remedies this, as both of these references also lack a two-dimensional array of protruding units, composed of binder and abrasive grains. Naujok and Flood et al. merely illustrate different shapes of protruding units.

Applicants contend that, at least for all these reasons provided above, Pieper et al. does not anticipate the pending claims, even when combined with Naujok and Flood et al. Withdrawal of the Section 102 rejection is requested.

Additionally, Pieper et al. when combined with Naujok and Flood et al. does not suggest or lead one to the pending claims. Withdrawal of the Section 103 rejection is requested.

Claims 19-20, 22-27 and 29-32 were rejected under 35 U.S.C. 103(a) as unpatentable over Pieper et al. (U.S. Patent No. 5,152,917) in view of Kaisaki et al. (U.S. Patent No. 6,194,317) or Adefris et al. (U.S. Patent No. 6,319,108). Applicants disagree.

Pieper et al. has been discussed above. Neither Kaisaki et al. nor Adefris et al. provides protruding units that have distal linear region which, when projected on to a plane that is coplanar with its respective base, extends between points on the first and third side edges of the base, offset from the center of the first and third side edges, toward the second side edge, this offset vector (toward the second side edge) being in the same direction and the same distance for each of the protruding units. Applicants acknowledge that both Kaisaki et al. and Adefris et al. teach tapered protruding units. Whether or not the units are separated from one another or not does not affect the teaching of these references as applied to the claims of the pending application. Neither Kaisaki et al. nor Adefris et al. has protruding units with a distal linear region that extends across the width of the unit (i.e., from the first side edge to the third side edge).

Applicants contend that Pieper et al. when combined with either Kaisaki et al. or Adefris et al. still does not suggest or lead one to the pending claims. Withdrawal of this Section 103 rejection is requested.

Claims 21, 24, 28 and 31 were rejected under 35 U.S.C. 103(a) as unpatentable over Pieper et al. in view of Naujok and Flood et al. and further in view of Gagliardi et al., (U.S. Patent No. 5,489,235). Claims 21 and 28 were rejected under 35 U.S.C. 103(a) as unpatentable over Pieper et al. in view of Kaisaki et al. (U.S. Patent No. 6,194,317) or Adefris et al. in view of Gagliardi et al., (U.S. Patent No. 5,489,235). Applicants disagree with both of these rejections.

The base rejections, based on Pieper et al., Naujok, Flood et al., Kaisaki et al. and Adefris et al., have been discussed above. Gagliardi et al. is added for the teaching of orienting the edges of the abrasive composites nonparallel to the edges of the article, for protruding units whose bases do not abut, and also for grinding aid.

Gagliardi et al. does not, however, remedy the deficiencies of the base references. Applicants contend that Pieper et al. when combined with any of Naujok, Flood et al., Kaisaki et al. or Adefris et al. and with Gagliardi et al., still does not suggest or lead one to the pending claims. Withdrawal of these Section 103 rejections is requested.

#### **Double Patenting Rejection**

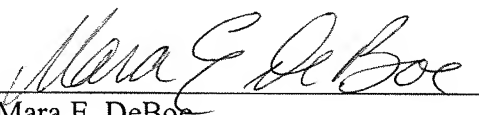
Claims 19-32 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over all the claims of co-pending application no. 10/668,799 in view of U.S. Patent No. 5,489,235 (Gagliardi et al.). Upon indication of allowable subject matter, Applicants will provide a Terminal Disclaimer, if necessary.

#### **Summary**

In view of the above amendments and remarks, Applicants respectfully request a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone Applicants' attorney Dan Biesterveld, Reg. No. 45,898, at 651.737.3193.

Respectfully submitted,

Date: January 30, 2007

  
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